

Sharpe; *Egotheles rufescens*, Salvad.; *Æ. plumifer*, Ramsay; *Micropsalis kalinowskii*, Berlep.; *Caprimulgus Rosenbergi*, Hartert; *C. nigricapularis*, Rchw.; *C. celebensis*, Grant; *C. aldabrensis*, Ridgw.; *C. Donaldsoni*, Sharpe; *Collocalia Whiteheadi*, Grant; *Cypseloides Cherriei*, Ridgw.; *Apus Willsi* (Hart.); *A. Shelleyi* (Salvad.); but of these *Egotheles plumifer* and *Apus Shelleyi* were referred to in footnotes in that Catalogue. Besides which the following thirteen subspecies are also added:—*Nyctibius jamaicensis arisens* (Gm.); *Nyctidromus albicollis derbyanus*, Gould; *Chordeiles virginicus aserriensis*, Cherrie; *Phalænoptilus Nuttalli nitidus*, Brewst.; *Caprimulgus macrurus ambiguus*, Hart.; *Caprimulgus macrurus nipalensis*, Hart.; *Caprimulgus europæus meridionalis*, Hart.; *Macropteryx mystacea Woodfordiana*, Hart.; *M. comata major*, Hart.; *Collocalia fuciphaga unicolor*, Jerd.; *Chatura zonaris pallidifrons*, Hart.; *Apus affinis galilejensis* (Antin.); and *Apus affinis Koenigi* (Rchw.). One new genus is given, viz. *Nannochordeiles*, Hartert [type *N. pusillus* (Gould)], and the following alterations and emendations are made:—*Egotheles Lorie* (Cat. B. Brit. Mus. xvi. p. 650) is omitted; *Eurostopus* is corrected (p. 23) to *Eurostopodus*; *Macropsalis forcipata* (p. 27) to *M. creagra* (Bp.); the genus *Cosmetornis* is suppressed and included (p. 30) in *Macrodipteryx*, and *M. macrodipterus* is corrected to *M. longipennis* (Shaw); *Heliothreptus* is altered (p. 31) to *Eliothreptus*; *Caprimulgus lentiginosus* stands (p. 55) now as *C. trimaculatus* (Sw.), *Caprimulgus jotaka* as *Caprimulgus indicus jotaka*, and *Caprimulgus Kelaarti* as *Caprimulgus indicus typicus*; *Collocalia merguensis* as *C. francica germani* (Oust.); *Tachornis batasiensis* is altered to *T. batasiensis*; and the generic name for the true Swifts is altered from *Micropus* to *Apus*, but should, we think, stand as *Cypselus*. Sixteen woodcuts of heads, feet, and tails are given, all of which will be found useful, and the entire work is well got up and conscientiously executed; and we congratulate Mr. Hartert on having completed so concise and useful a manual of these families.

MISCELLANEOUS.

On the Malpighian Tubes of Orthoptera.

By M. L. BORDAS*.

THE Malpighian vessels in Orthoptera present a close analogy with those of Hymenoptera so far as their number and length is concerned, but they differ essentially in their arrangement and mode of opening. They are, as a rule, capillary tubes, more or less elongated, cylindrical, tortuous, and arranged in several bundles which open in the majority of species on the summit of six little conical tubercles, arising in evaginations of the anterior extremity of the terminal portion of the intestine. In Forficulidæ, Phasmidæ, and Gryllidæ the relations of these glands to the intestine are entirely different.

From the histological point of view these glands consist of an external very delicate peritoneal coat and an internal epithelium

* Abstract from a work, 'Appareil digestif des Orthoptères.'

lying upon a very thin basement membrane. The epithelium is formed of a number of excretory cells, varying with the species, and encloses a very fine central lumen.

Among the various excretory products of these glands I have found abundance of sodic and calcic urate in *Gryllus*; uric acid in *Gryllotalpa* in the form of irregular spherical or ovoid concretions and prismatic crystals; sodic urate and uric acid in *Blatta* and *Periplaneta*.

The research has been made on about eighty species, belonging to seven principal families of the Orthoptera, and I will now proceed to describe the results, insisting specially on the mode of opening of the Malpighian tubes. Further, thanks to the numerous specimens placed at our disposal, I have been enabled to observe the diverse modes of opening which the urinary organs affect in Orthoptera, and to follow out all the phases between the two extreme types—that is to say, those in which the tubes of Malpighi open into the end of the intestine at the summit of a number of tubercles grouped in circles, and those in which they form only one large bundle, opening at the end into a long urethral tube dilated at the extremity.

We will pass in review the several families in the order of diminution of complication.

The tubes of Malpighi in the Forficulidæ are small in number (8 to 10) and grouped in two bundles placed at the ends of a diameter at the origin of the terminal intestine.

In the Phasmidæ the urinary organs are very numerous and united in several bundles (20 to 24 in *Phibalosoma*), opening into an equal number of hemispherical or conical tubercles, very short and disposed in a circle around the intestine, of which they are nothing more than simple evaginations. In *Acanthoderus* and *Necroscia* each collecting-tubercle receives but two or three Malpighian tubes.

The Mantidæ possess 60 to 70 urinary tubes, inserted sometimes irregularly, sometimes grouped in bundles (3 or 4) at the origin of the terminal intestine (*Eremiaphila*). The Praying Mantis possesses 50 or 60, united in several bundles separated by narrow free spaces.

In *Periplaneta* and *Blatta* the Malpighian tubes are grouped in 6 bundles, each comprising 15 to 20 tubes opening on the summit of a very short conical tubercle. These six tubercles, greatly reduced and with a broad base, arise from intestinal evaginations. They are about equidistant from one another and arranged in a circle around the intestine. The urinary organs of *Polyzosteria* are thin, short, winding, and arranged equally in six groups. In *Blabera* the mode of opening of the tubes of Malpighi is altogether characteristic and quite different from that observed in other Blattidæ. The tubular glands, to the number of 50 or 60, open on an irregular area comprising about one third of the circumference of the intestine.

In the family of the Acridiidæ the number of Malpighian tubes is very variable, certain species (*Pæcilocerus*, *Pyrgomorpha*) having as many as 100; others have 60 to 70 (*Pamphagus*), and some 70 to 80 (*Edipoda*) or 50 to 60 (*Psophus*, *Pachytylus*, &c.). In all

these species these organs are grouped in a small number of bundles (5 or 6), directed, some backwards, some forwards, and covering partly the middle and partly the posterior intestine. In all the Locustidæ the number of the tubes of Malpighi exceeds 100. They are grouped in six bundles, opening at the summit of six cylindrical tubercles, sometimes disposed irregularly, sometimes at equal distances one from the other, at the origin of the terminal intestine (*Locusta*, *Decticus*, *Salomona*, *Pseudorhynchus*, *Platypleis*, &c.). In the Ephippigerinæ there are only 3 or 4 of these conical tubercles, with 110 to 120 urinary tubes. Lastly, through *Gryllaeris*, which has, as a rule, but one collecting-tubercle, fairly short, on the summit of which 80 to 100 Malpighian tubes open, we pass to the Gryllidæ. The number of tubes in various Gryllidæ is very considerable, and exceeds 100; 100 to 120 may be counted in *Gryllus* and *Gryllotalpa*. These organs are long, tortuous, and open at the widened end (pan-shaped) of a single cylindrical collecting-canal (ureter). This last, after a course of 9-12 millim., penetrates a little below the origin of the terminal intestine, and there opens on the summit of a conical or dolioform tubercle, with a blunted point and armed with four valves bounding a star-shaped orifice (*Gryllotalpa*).—*Comptes Rendus*, tom. cxxiv. pp. 46-48.

The supposed great Octopus of Florida: certainly not a Cephalopod.

By A. E. VERRILL.

Additional facts have been ascertained and specimens received that render it quite certain that this remarkable structure is not the body of a Cephalopod. It was described by me, in the January number of this Journal [also 'Annals,' Feb. 1897], as the body of an Octopus*, from the examination of a number of photographs and the statement made to me that, when it was first cast ashore, stumps of arms were found adherent to one end, one of which was said to have been 36 feet long †. Subsequently, when it was excavated and moved, this statement proved to be erroneous. Apparently nothing that can be called stumps of arms or any other appendages were present. Folds of the integument and mutilated and partly detached portions may have been mistaken for such structures. No bones or other hard parts were found in it.

* Many other zoologists who examined the photographs held the same opinion. Some of those who have seen the samples of integument sent to me still believe that the specimen may be the body of some unknown genus of Cephalopods, allied to *Octopus*. But the thick integument of a Cephalopod is necessarily muscular and highly contractile, while in this creature it is elastic and resistant, and not at all contractile. Therefore I cannot refer it to that group, after having examined this structure.

† The following is the written statement made by Mr. Wilson to Dr. Webb in regard to the "arms" that he found when it first went ashore:—"One arm was lying west of body, 23 feet long; one stump of arm west of body, about 4 feet; three arms lying south of body, and from appearances attached to same (although I did not dig quite to body, as it laid well down in the sand, and I was very tired), longest one measured over 32 feet; the other arms were 3 to 5 feet shorter." Soon after this examination the specimen went adrift in another severe storm and was again cast ashore two miles further south, which will probably account for the loss of these supposed arms.